

FULTON COUNTY

October 28, 2016

Re: #16ITB091416K-JD Chattahoochee III Pump Station Upgrades

Dear Bidders:

Attached is one (1) copy of Addendum Number 2, hereby made a part of the above-referenced Invitation to Bid (ITB).

Except as provided herein, all terms and conditions in the ITB referenced above remain unchanged and in full force and effect.

Sincerely,

Joyce Daniel

Joyce Daniel, CPPB
Assistant Purchasing Agent

This Addendum forms a part of the contract documents and **modifies** the original documents as noted below:

REVISIONS

- 1. The Bid Form has been revised. All bids for the project shall be completed and submitted on the revised Bid Form. See Attachment 1.**
- 2. Section 4, Scope of Work and Technical Specifications, 11500, Dry Pit Submersible Wastewater Pumps has been revised. See Attachment 2 for revisions.**
- 3. Section 9, Scope of Work and Technical specifications, 13500-1, Odor Control System has been revised. See Attachment 3 for revisions.**
- 4. Section 4, Scope of Work and Technical Specifications , Table of Contents is provided. See Attachment 4.**
- 5. Drawings have been revised. See Attachment 5.**

RESPONSE TO QUESTIONS

I saw that there was a pre-bid conference on 10/13/16.

Was this mandatory? Or will you accept bids from GCs that were not in attendance?

RESPONSE: The pre-bid was not mandatory, but the site visit was. Only vendors that attended the mandatory site visit will be able to bid the project.

What is Item No. 4 on the bid form?

RESPONSE: The Bid Form has been revised. See Attachment 1 for revisions.

If the prime contractor is both MBE and FBE, is the engagement of MBE and FBE subs still required?

RESPONSE: Yes. We ask that all Prime contractors, whether Non-Minority, MBE or FBE, to use M/FBE sub contractors by showing a Good Faith Effort. That being said, the Prime contractors show that they made all efforts reasonably possible to ensure that Minority and Female Businesses were reached out to, and had a full and fair opportunity to compete as a subcontractor on this project.

The deadline for questions is on 10/27/2016. When can we expect to have addendum 2 out?

RESPONSE: The addendum will posted to the website in ample time for all vendors to review and respond to the bid by the due date of Monday, November 7, 2016 at 11:00 A.M.

Please clarify what is to be included in Bid Items #3 and #4 of the Bid Form.

RESPONSE: See Attachment 1, revised Bid Form.

Section 2- Bid Form, item 8 of 8 states there is an Owner Controlled contingency which includes an item identified as inspection and testing. What inspection and testing is included in the contingency?

RESPONSE: The Owner Controlled Contingency inspection and testing includes inspection and testing by the Owner as a verification of the Work performed under this Contract. The Owner inspection and testing allowance is for additional testing of the Work performed under this Contract to verify that the Work meets the requirements. The Construction Manager will determine if any additional inspection or testing will be required for any Work. Any Work not passing the Owner's inspection and testing will be rejected by the Owner and the Contractor will be responsible for the replacement of the defective Work and any additional inspection and testing.

Spec section 01150- Measurement and payment does not define what is included in the Owner's Allowance so the inspection and testing scope is not known

RESPONSE: The Contractor is responsible for all inspection and testing for the Project. Measurement and Payment is not required as the Contractor is responsible for inspection and testing under the Contract.

Spec section 01410- Testing Laboratory Services, 1.02A stated that payment for testing services required by the Contract shall be the responsibility of the Contractor.

RESPONSE: The Contractor is responsible for all inspection and testing for the Project. The Contractor is responsible for the payment of all testing services. The Owner will be performing additional testing and inspection of the Work as determined by the Construction Manager.

Please clarify if the Owner or Contractor is responsible for testing (i.e., concrete strength and slump testing, existing soils conditions, soil compaction, etc.). What,

if any, other inspection and/or testing requirements are there that would be included in the Owner Contingency line item.

RESPONSE: The Contractor is responsible for all inspection and testing for the Project. The Owner inspection and testing allowance is for additional testing of the Work performed under this Contract to verify that the Work meets the requirements. The Construction Manager will determine if any additional inspection or testing will be required for any Work. Any Work not passing the Owner's inspection and testing will be rejected by the Owner and the Contractor will be responsible for the replacement of the defective Work and any additional inspection and testing.

The revised drawings do not show a meter vault. Was this deleted from the scope of work? Please confirm. Should drawing C-407 be deleted from the set?

RESPONSE: The Meter vault is deleted. See revised plans in Addendum #1 dated October 19, 2016.

Based upon drawing M-204, we are assuming the 30" flowmeter has been replaced with a 16" flowmeter. Please confirm the configuration depicted will provide an acceptable flow condition for an electromagnetic flowmeter. It appears the close proximity of out of plane turns as well the close proximity of valves may cause an issue with meter accuracy.

RESPONSE: The meter is located inside the pump room per the revised plans and is a 16" meter. See revised plans in Addendum #1 dated October 19, 2016.

The drop inlet identified as GI A-3 and called out as detail 2/C-402 Drop Inlet with Circular Section can't be constructed as shown. There is inadequate coverage from the specified invert of the 12" pipe to the Rim elevation. The adjacent piping within the roadway will not have adequate cover per details 2/C-402, 3/C-403 and 4/C-404. Please provide supplementary details for the instances where the design does not meet coverage requirements.

RESPONSE: The detail provides the general intent of the structure. The structure shall be modified in order to accommodate dual pipes.

Please confirm which Type repair (A or C) on Detail 3/C-403 we shall comply to when making asphalt repairs after piping installation.

RESPONSE: Type A since this is an asphalt driveway.

Can you please provide a table of content for the specifications.

RESPONSE: Yes. See Attachment 4.

C-404 (detail 5) - Detail does not provide details for the headwall and it certainly does not show the provision for a double 12" DIP. Can you please clarify?

RESPONSE: The detail provides the general intent of the structure. The structure shall be modified in order to accommodate dual pipes.

C-404 (detail 6) - Detail does not show the diameter for manhole JB A-2. Can you please clarify?

RESPONSE: The junction box should have a diameter sufficient to handle the twin 12" pipes entering and exiting the structure. A 4' inside diameter should suffice.

C-402 (detail 3) - the pedestal drop inlet only shows a single pipe penetration instead of the double 12" DIP. Can you please clarify?

RESPONSE: The detail provides the general intent of the structure. The structure shall be modified in order to accommodate dual pipes.

How are the pumps to be bid: to a contractor or is Fulton County pre-purchasing these? If pre-purchased, who do we address the bid to?

RESPONSE: All equipment is to be provided by the contractor. Fulton County is not purchasing equipment. However, the contractor is to provide a bill of sale so they can submit the sales for tax credit.

Is the pump supplier required to provide the VFDs or is Fulton County purchasing them on their own?

RESPONSE: All equipment is to be provided by the contractor. Fulton County is not purchasing equipment. However, contractor is to provide a bill of sale so they can submit the sales for tax credit.

The specifications require that pumps meet NEC Class 1, DIV 1, Group C and D service (FM), for areas classified as hazardous locations. This normally applies to wet pit installed pumps. Since this is a dry-mounted installation, do you still require this?

RESPONSE: Yes.

What is the **static** (pump size related question)?

RESPONSE: See new pump specifications referenced in Addendum #1 dated October 19, 2016.

What is the required pump cable length?

RESPONSE: The Contractor is to determine the length required based on the construction drawings and actual field conditions.

ECS Environmental Solutions is preparing a competitive proposal for the odor control equipment covered under section 13500 of the bid documents. Our firm has supplied a number of carbon -based odor control systems for Fulton County over the past 5 years and have some concerns. These concerns involve items not covered that we believe are necessary for proper O&M of these units, construction standards and / or preferences by your O&M staff.

Items not specified by Recommended or general comments

For vertical bed units it is important they be supplied with an internal sloped bottom to keep the carbon bed out of any condensate that forms in the vessel. The lower portion of the bed will get wet and lack treatment. It may also solidify. We would like to recommend that the vessel include this internal slope bottom (1/8" per ft. of vessel dia. min) and it be designed to keep the carbon bed out of condensate.

RESPONSE: Spec. -13500 Odor Control System Item 2.04B. Shall change "flat bottom" to "flat bottom with internal slope of 1/8" per foot to allow condensate draining."

Attached is a standard 7000 CFM VX radial flow packaged from ECS. It includes details on the fan, vessel, prefilter. This is available in autocad format and CAN BE CUSTOMIZED to fit any general size constraint found in an application. If we can be of assistance please call. This is simply a basic standard configuration.

RESPONSE: No response is required for a statement.

Relative to the layout on H-202 and H-401

The Mist / Grease eliminator in these drawings do not show the location of any access doors. Based on the cross-sectional width of the prefilter ECS would recommend that the unit have two (2) access doors so operators do not have to reach inside the prefilter.

RESPONSE: Specifications 13500, Item 2.16.0 calls for doors (plural). (2.16) In the past Fulton county has required hinged access doors with stainless steel quick clamps to facilitate easy removal of the pad. Are the quick clamps required or are bolt-on access doors acceptable? RESPONSE: Hinged access doors are specified in speciation 13500, Item 2.16.0. This should include stainless steel quick access clamps.

The inlet and outlet transitions on the prefilter are too steep. Air traveling into the unit will not have a chance to evenly disperse over the pad surface. ECS would

recommend that the damper shown on the inlet of the unit on H-202 be moved to a different location and the inlet transition into the prefilter unit be extended. If necessary ECS will send a detail of the suggested layout necessary to accomplish proper airflow distribution over the pad surface.

RESPONSE: The inlet and outlet transitions may be modified to ensure performance guarantees.

The radial flow carbon adsorber vessel appears to have four small hatches on top for media access. It has been our experience that for tall vertical beds larger access doors are necessary for proper removal of the media. Standard ECS units include large crescent access doors (see the attached detail) which when removed expose at least 75% of the carbon bed. Please consider adding this requirement to the specification and / or the detail drawing.

RESPONSE: Access doors shall be adequate for easy removal of carbon bed.

Relative to section 13500

1) 1.06, C, 11 mentions dispersion out of the exhaust stack with an exit velocity of 40 fps. The drawing seems to show an antiquated rain cap style which will prevent any dispersion and put the effluent air back down onto the equipment directly ECS recommends using a SMACA high velocity dispersion stack with over-cap rain guard. This design will not impede the effluent airflow from the stack and allow for the intended dispersion.

RESPONSE: A SMACNA high velocity dispersion stack with over-cap rain guard shall be provided.

1.03, Submittals – Radial flow carbon adsorber systems require a high level of engineering and design to ensure proper airflow distribution. CFD analysis is an important component of that design. ECS would like to recommend that CFD of this particular unit be required. That CFD should calculate internal airflow using the fan curve utilized on this project, CAD geometry and media resistance. Analysis should identify areas of flow stagnation with the system including areas where air velocity is less than 20% of bulk average. Analysis should show air velocity variance no greater than 5% through each odor control media element across the entire length of the media. CFD model goals should converge to a minimum of 3%. Perhaps most importantly we recommend that data recovered from five experimental designs be utilized for this analysis. Radial flow carbon technology has evolved a considerable amount over the past 5 years and this data is very important to proper media utilization.

RESPONSE: The contractor may provide a CFD analysis if desired.

1.03 – please consider requiring a set of PE stamped design calculations be provided for the vessel. That has been something Fulton County has required in the past. 1.04, B requires engineering on the foundation but not the odor control unit itself.

RESPONSE: Yes. The odor control design system shall include design calculations signed and sealed by a registered professional engineer.

1.04, A, 2 – do the references have to be radial flow installations or just any carbon based configuration? How many radial installations, if any are required to be in Fulton County?

RESPONSE: Yes, they must be radial flow installations. They do not have to be in Fulton County.

2.01, B, 5 implies that the vessel may be flooded to provide flushing of the media. Please confirm the unit needs to be designed for full hydrostatic pressure to the top of the media bed, or not. If so, will the unit need to be hydrotested prior to installation.

RESPONSE: Yes.

2.02 states the media must be derived from bituminous coal. ECS has been supplying high capacity (0.3 g/cc) carbon to Fulton county for quite some time in the form of a coconut-based pellet. Please confirm that this base product is equally acceptable to the bituminous coal specified. Coconut based 4mm extruded pellets include RIAS 1010 from Haycarb, Sulfadsorb-HC from ECS and Minotaur from Calgon. Midas from Evoqua is the only high capacity bituminous coal based pellet on the market.

RESPONSE: Yes, this is acceptable as long as the performance can be guaranteed.

2.02, C – chart states that the H₂S capacity should be greater than 0.30 All commercially available media's advertise a 0.3 g/cc H₂S capacity and no more. Can this statement be changed "equal to or greater than"

RESPONSE: This is acceptable.

2.03, B states that the EBCT should not exceed 2.16 seconds. This is far less EBRT than Fulton County has allowed in the past (typically a minimum of 3 seconds). Please confirm this is accurate. We believe this may be an error and they wish to determined bed velocity. Assuming this is the case ECS would recommend a maximum average bed velocity of 60 fpm maximum be used.

RESPONSE: The correct minimum empty bed residence time shall not be less than 3.0 seconds.

2.03, M states that a flow control damper should be installed between the fan outlet and the vessel inlet but it is not shown on the drawing. Please confirm if it is necessary.

RESPONSE: The drawing shows the damper incorrectly. It should be between the fan and vessel as specified on specification 13500 Item 2.03M.

2.13, A, 13 states that the unit should be supplied with 900 cubic feet of media. At 7000 cfm this results in an EBCT of 7.7 seconds – which is in direct conflict with my comment number 8 above. Please confirm actual carbon volume, ECS would recommend this be changed to a minimum carbon volume of 350 cubic ft. (3 seconds of EBCT).

RESPONSE: The correct minimum empty bed residence time shall not be less than 3.0 seconds.

2.16 – In the past Fulton county has required hinged access doors with stainless steel quick clamps to facilitate easy removal of the pad. Are the quick clamps required or are bolt-on access doors acceptable?

RESPONSE: Hinged access doors are specified in specification 13500, Item 2.16.0. This should include stainless steel quick access clamps.

2.16 – the pad specified here is 100% poly mesh. ECS would recommend a combination pad be used consisting of 2" 316 stainless mesh followed by 4" poly mesh all held together by 316 stainless grids. The stainless can be aggressively washed by a pressure washer in a high heat setting without damage. This is important for grease / debris removal.

RESPONSE: This would be an approved equal.

ECS recommends that the prefilter be supplied with a drain port to allow drainage of condensate. The port should be located in a base 2" wide channel spanning the width of the prefilter housing so that the pad does not sit directly on the drain port. This prevents plugging of that port and allows moisture which collects on the pad edges to reach the port.

RESPONSE: This is an acceptable alternative.

ECS recommends that the prefilter housing be supplied with integral legs which are used to support the unit. It is not a good practice to support the heavy prefilter from any adjoining ductwork / fan flexible connector.

RESPONSE: Support legs have been added to the specifications.

ECS recommends that a spare set of prefilter pads be supplied under section 2.12. Fulton County has purchased spare pads for all ECS installations.

RESPONSE: A spare set of prefilter pads shall be provided.

2.01 A – please confirm resin system required for fan construction, the specification only states fiberglass reinforced plastic. ECS recommends a class 1 flame retardant vinyl ester (same as specified for the FRP vessel)

RESPONSE: A class 1 flame retardant vinyl ester system shall be provided on all exposed systems.

On behalf of PureAir Filtration, in reference to spec section 13500, I have the following questions/clarifications...

1.02.C.6. Vacuum ports are not required as the spent carbon from these units must be vacuumed from the top.

RESPONSE: This is acceptable.

2.03.B. To ensure a sufficiently sized system, the residence time should be stated as “not be less than” 2.16 secs, not “shall not exceed”

RESPONSE: The correct minimum empty bed residence time shall not be less than 3.0 seconds.

2.13.A.8. Can an average H₂S level be provided? This info is required to calculate the carbon life.

RESPONSE: Concentration levels are provided in specifications 13500 Item 2.13A. Contractor will be responsible for additional testing if required.

The specified flow and head does not match the specified pump or hp. Please advise the correct design.

RESPONSE: This data is corrected in the attached new pump spec.

Can KSB be added as an equal manufacturer on the project? They are one of the largest pump manufacturers globally, and one of the pioneers of the closed loop cooling system and have been making them for many years.

RESPONSE: Insufficient data provided to determine if equipment is an approved equal. If the pump is an equal, Fulton County will accept.

Can Whipps be added as an equal manufacturer on the gates? Fulton County has a significant population of Whipps gates in their system already.

RESPONSE: Insufficient data provided to determine if equipment is an approved equal. If the pump is an equal, Fulton County will accept.

E-206, Note 3 states to provide all new conductors.....are these pumps 102, 103, 104 & 105?

RESPONSE: Yes.

Who is providing new VFD's?

RESPONSE: The Contractor is to provide and install per manufacturer recommendations.

Who is providing the (2) feeder buckets shown on the one-line? If the contractor is to provide them, we need the nameplate information from the MCC.

RESPONSE: The Contractor is responsible to supply the feeder buckets. The information should have been collected by contractor during the site visit at pre-bid.

Section 16171-10, 3.04B- Warranty for the VFD. Can you please clarify this requirement as it is not easy and common to acquire such a warranty.

RESPONSE: That section is very detailed as to what is required of that warranty and it further states that warranty shall be included in bid, coordinate with specified equipment supplier.

What is the minimum criteria that was called out in the project specifications Section 8 (Special Conditions) pages 11, 12, 13

RESPONSE: Contractors must have successfully completed at least two contracts involving construction or modification of water or wastewater pumping stations which included reinforced concrete, erection of structural steel, piping, installation of mechanical equipment, electrical and instrumentation systems with a capacity of not less than 2 MGD and a construction value of not less than \$500,000.

2.02.A.3. Request that the maximum allowable motor HP would need to be raised to 115 HP. Note that the actual HP draw at the duty conditions will be less than your spec requirements (I have included these values on the attached data

sheets). This will not impact the electrical requirements for the project as 125 HP VFDs will need to be provided regardless if 105 HP or 115 HP pumps are provided.

Response: This is acceptable but Contractor must provide proof that all existing and proposed electrical system and equipment will work properly with the new pumps and Fulton County will incur no additional cost including operating and repair cost.

2.02.A.4 Request that the minimum shutoff head should be raised to 240 ft. Note that the shut off head cannot be less than your highest TDH rating for the pump.

Response: This is acceptable.

2.02.A.6. This pump will meet the efficiency requirements at two out of three of the duty condition. At the 3rd pump duty condition, this pump will run at 65% efficiency. It is requested that this requirement to 65%.

Response: This is acceptable.

2.02.A.7. Minimum Impeller Eye Diameter. I believe that this should read, Minimum Impeller Diameter. The impeller diameter for the XFP 105J is 14.1 inches.

Response: This is acceptable as long as the 4" diameter solids passing requirement can still be met.

Section 2.05.B.2 (page 12): Spec calls for ASTM A-48, Class 35B cast iron cooling jacket. Our cooling jacket is ASTM A-570, Grade D Steel.

Response: This is acceptable.

Section 2.05.B.4 (page 12): Spec calls for (2) flanged gasketed minimum 4" inspection ports on the cooling jacket. It is requested that this item be deleted as a requirement as we cannot offer this.

Response: This is not acceptable. Inspection ports are required.

Section 2.05.D.3 (page 14): Spec calls for a 1.15 S.F. motor. We will supply superior 1.3 S.F. motor.

Response: This is acceptable.

Section 2.05.G.1 (page 15): Spec calls for tungsten-carbide seals. It is requested that silicon-carbide seals be allowed as this is the only seal materials that we can provide.

Response: This is not acceptable.

Section 2.05.I.1 (page 16): Spec calls out a closed (double shrouded) impeller. We will offer Sulzer-ABS solids handling semi-open Contra-Block design. Note that the Contra-Block is a better impeller design for handling solids than an enclosed impeller. Please confirm that this is acceptable.

Response: This is acceptable but the vendor must prove that rags will not be an increased problem/issue.

Section 2.05.J.1/2 (page 16/17): Spec calls for impeller/volute wear rings which do not apply to the semi-open Contra-Block impeller design, so this pump will be provided without wear rings.

Response: This is acceptable.

Section 2.05.L.3/4 (page 18): Spec calls for Flygt's FLS switch. We will offer our conductivity DI-probes for leakage sensing.

Response: This is acceptable but must work with other equipment.

**ACKNOWLEDGEMENT OF ADDENDUM NO.2, #16ITB090116-JD –
Chattahoochee III Pump Station Upgrades.**

The undersigned Proposer acknowledges receipt of this Addendum by returning one (1) copy of this form with the proposal submittal package to the Department of Purchasing & Contract Compliance, Fulton County Public Safety Building, 130 Peachtree Street, S.W., Suite 1168, Atlanta, Georgia 30303 by the ITB due date and time Monday, November 7, 2016 at 11:00 A.M.

This is to acknowledge receipt of Addendum No. 2, _____ day of _____, 2016.

Legal Name of Bidder

Signature of Authorized Representative

Title

ATTACHMENT 1
REVISED BID FORM

BID FORM

Submitted To: Fulton County Government

Submitted By: _____

For: **#16ITB091416K-JD - Chattahoochee III Pump Station Upgrades**

Submitted on _____, 20__.

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Bid as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Bid or in the Contract to be entered into; that this Bid is made without connection with any other person, company or parties making a Bid; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the Drawings and Specifications for the work and contractual documents relative thereto, and has read all instructions to Bidders and General Conditions furnished prior to the openings of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this Bid is accepted, to contract with the Board of Commissioners of Fulton County, Atlanta, Georgia, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary, and to complete the construction of the work in full and complete accordance with the shown, noted, and reasonably intended requirements of the Specifications and Contract Documents to the full and entire satisfaction of the Board of Commissioners of Fulton County, Atlanta, Georgia, with a definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents for the following prices.

THE BASE BID IS THE AMOUNT UPON WHICH THE BIDDER WILL BE FORMALLY EVALUATED AND WHICH WILL BE USED TO DETERMINE THE LOWEST RESPONSIBLE BIDDER.

The base bid may not be withdrawn or modified for a period of sixty (60) days following the receipt of bids.

BASE BID AMOUNT (Do not include any Bid Alternates)

\$ _____
(Dollar Amount In Numbers)

(Dollar Amount in Words)

The Bidder agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written "Notice to Proceed" from the County.

The Bidder declares that he understands that the quantities shown for the unit prices items are subject to either increase or decrease, and that should the quantities of any of the items of work be increased, the Bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the Bidder also understands that payment will be made on the basis of actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in quantities; and that actual quantities will be determined upon completion of work, at which time adjustments will be made to the contract amount by direct increase or decrease.

BASE BID AMOUNT

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL PRICE
1.	PUMP STATION UPGRADE Include all equipment, materials, labor, demolition, debris removal and appurtenances to complete the work as outlined in the Scope of Work, construction drawings, bid documents and specifications. Include all costs here which are not specifically allowed for elsewhere.	1	LS		
2.	PRESSURE WASHING AND PAINTING Pressure wash and paint all exterior and interior walls, doors, floors, etc. as outlined in the construction Drawings and Specifications. All surfaces are to be pressure washed, painting is only required for surfaces already painted	1	LS		
3.	SITE WORK IMPROVEMENTS Installation as outlined in the drawings and Specifications. This does not include the Grasscrete Pavers listed in the Alternate Bid Item.	1	LS		
4.	EROSION CONTROL Per the Drawings, Specifications, and Contract Documents.	1	LS		
5.	Wet Well Grit Removal and Cleaning.	10	TONS		
6.	By-Pass Pumping	1	LS		
7.	24-inch Flare, Complete Install	1	LS		
8.	Owner Controlled Contingency Includes: inspection and testing, miscellaneous concrete repair, landscaping/grassing and Grasscrete paver system				\$190,000.00
	TOTAL BASE BID AMOUNT <i>(lines 1-8)</i>				

The Bidder furthermore agrees that, in the case of a failure on his part to execute the Contract Agreement and Bonds within ten days after receipt of conformed contract documents for execution, the Bid Bond accompanying his bid and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure.

Enclosed is a Bid Bond in the approved form, in the sum of:

_____ Dollars

(\$_____) according to the conditions of "Instructions to Bidders" and provisions thereof.

The undersigned acknowledges receipt of the following addenda (list by the number and date appearing on each addendum) and thereby affirms that its Bid considers and incorporates any modifications to the originally issued Bidding Documents included therein.

ADDENDUM #	_____	DATED	_____
ADDENDUM #	_____	DATED	_____
ADDENDUM #	_____	DATED	_____
ADDENDUM #	_____	DATED	_____

BIDDER: _____

Signed by: _____
[Type or Print Name]

Title: _____

Business Address: _____

Business Phone: _____

Note: If the Bidder is a corporation, the Bid shall be signed by an officer of the corporation; if a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

The full name and addresses of persons or parties interested in the foregoing Bid, as principals, are as follows:

Name	Address
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

END OF SECTION

ATTACHMENT 2

Revised

**Section 4, Scope of Work and Technical Specifications
Section 11500 – Dry Pit Submersible Wastewater Pumps**

SECTION 11500

DRY PIT SUBMERSIBLE WASTEWATER PUMPS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes requirements for submersible wastewater pumps. Pump types included in this section are:
 - 1. Dry pit submersible.
- B. Unit Responsibility:
 - 1. The work requires that the equipment specified herein shall be complete with all accessories and appurtenances, and shall be the end product of one responsible system manufacturer or responsible system supplier.
 - 2. The Contractor shall obtain each system from the responsible supplier of the equipment. The Supplier shall furnish all Components and accessories of the system to enhance compatibility, ease of operation and maintenance, and as necessary to place the equipment in operation in conformance with the specified performance, features, and functions.
 - 3. The Contractor is responsible for ensuring that new equipment is fully compatible with existing equipment to remain, including existing controls, and that the entire facility is fully functional.
- C. Related Sections include the following:
 - 1. Division 01 Section "Closeout Procedures" for warranty submission requirements.
 - 2. Division 01 Section "Project Record Documents" for post construction requirements.
 - 3. Division 13 Process Integration sections for instrumentation equipment.
 - 4. Division 16 Electrical sections for electrical requirements.

1.03 DEFINITIONS/STANDARDS

- A. Ensure products and installation of specified products are in conformance with recommendations and requirements of the following organizations:
 - 1. Hydraulic Institute (HI)
 - 2. National Sanitation Foundation (NSF).
 - 3. American Society of Mechanical Engineers (ASME).
 - 4. National Electrical Manufacturers' Association (NEMA).
 - 5. Underwriters Laboratories (UL).
 - 6. National Electrical Code (NEC)
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

1.04 SUBMITTALS

- A. Product Data: Complete engineering data including, but not limited to, descriptive data, material specifications, pump performance curves, mass moment of inertia calculations for the impeller, motor performance data, piping diagrams, and wiring diagrams. Differentiate between manufacturer installed and field installed wiring.
- B. Characteristic pump performance curves: Submit to the Engineer for approval prior to beginning fabrication of the pumping units.
- C. Certified pump performance curves: Submit to the Engineer for approval prior to shipping the units.
- D. Characteristic and certified performance curves shall depict, at a minimum, the following information:
 - 1. Head (Ft.) vs. Capacity (GPM).
 - 2. Pump Speed (RPM).
 - 3. Impeller diameter (In.)
 - 4. Diameter (In.) of largest spherical solid that can be passed.
 - 5. Area (Sq. In.) of the eye of the impeller.
 - 6. Clearly marked operating points.

7. Power requirements (HP).
 8. Shut-off head (Ft.).
 9. Kilowatt (kW) usage at design conditions.
 10. Net positive suction head (NPSH) requirements.
 11. Efficiency (%) at design conditions.
 12. Combined weight of pump & motor.
- E. Shop Drawings:
1. Complete layout and connection drawings for pumping systems, including plan, elevation, sections, and details. Include setting drawings with templates, directions for installing foundation and anchor bolts, and other anchorages.
 2. Control panel schematics and layout drawings.
 3. Descriptive literature and catalog cut sheets.
 4. The Contractor shall, in writing, call to the Engineer's attention any deviations that the submittal has from the requirements of the Contract Drawings and Specifications.
- F. Operation and Maintenance Data: Provide O&M manuals for pumps as specified in Division 01 and in "Operation and Maintenance Manuals" article of this specification.
- G. Manufacturer's Certification: Provide a certification by a qualified representative of the pumping system manufacturer that the equipment is installed properly, operating within the design parameters, and will be warranted as specified herein. Certification shall be based on a detailed inspection of the installation following the successful start-up of the systems.

1.05 QUALITY ASSURANCE

- A. All pumps shall be of approved design and products of manufacturers who have built equipment of similar type, size, and capacity.
- B. The supplier shall furnish a completely automated, operable pumping system, including submersible pumps and motors, submersible power and monitoring cables, pump discharge elbows, pump guide rail systems, control systems and all appurtenances and accessories as shown on the Drawings and specified hereinafter.
- C. A pressure transducer style pump control system is provided, an emergency ultrasonic system shall also be provided.

- D. The Contractor shall provide all labor, materials, equipment, and method of installation necessary to complete the work.
- E. The work shall be complete with installation of pumps, electrical and instrumentation work, connecting piping, and appurtenances, as shown on the Drawings and specified hereinafter.
- F. Telemetry system connection is required as part of the work, provisions shall be made for connection to the existing telemetry system.
- G. Product Options: Drawings indicate size, profiles, connections, and dimensional requirements of pumps and are based on specific manufacturer type and model indicated.
- H. Additional Submittals: The Contractor shall submit, upon request, any additional information that the Engineer may deem necessary to determine the ability of the proposed manufacturer to produce the specified equipment.
- I. Pump Performance Testing:
 - 1. Notify Engineer at least 30 days prior to date scheduled for performance tests.
 - 2. Perform certification tests on the actual assembled pumps to be supplied.
 - 3. Perform factory tests on each pumping unit in the manufacturer's facility and in accordance with applicable standards of the Hydraulic Institute to demonstrate compliance with specified requirements.
 - 4. Certification tests shall be performed over an operating range from shut-off head to a minimum of 20 percent beyond the specified design performance capacity. Certification tests shall be conducted on each pump being supplied.
 - 5. A pump curve shall be generated showing actual flow, head, BHP, and hydraulic efficiency for each pump being supplied.
 - 6. A registered Professional Engineer shall certify each pump curve.
 - 7. Engineer to witness all pump performance tests.
- J. Materials, pumps and installation shall comply with federal, state and local code requirements, including any requirements of authorities having jurisdiction.
- K. Verify that specified equipment does not exceed space allocation, and provide the manufacturer Plans as necessary.

- L. Replacement Parts Capability: Pump station components shall be the products of manufacturers who can produce evidence of their ability to promptly furnish any and all interchangeable replacement parts as may be needed at any time within the expected life of the components.
1. Upon request, the Contractor shall submit full details of the proposed component manufacturer's ability to promptly fill replacement orders.
- M. Manufacturer Information: All manufacturer information required by the specifications shall be submitted by the Contractor within thirty (30) calendar days of the date of receipt of the Notice to Proceed.
1. Any additional information or data, specifically requested by the Engineer, concerning manufacturer's capabilities (especially relating to requirements described hereinbefore), shall be submitted by the Contractor within fourteen (14) calendar days of the receipt of the written request therefore, unless otherwise specified.
 2. Approval of manufacturers will not be given until all information required by the specifications or requested by the Engineer has been submitted and acceptable.
- N. Disqualification of Manufacturer:
1. Failure to successfully comply with the provisions of this paragraph will constitute grounds for disqualification of the pump manufacturer.
 2. Poor performance of similar pumps in operation under the specified conditions of service, constitute grounds for disqualification of the pump/pump station manufacturer unless such poor performance has been corrected.
- O. Experience:
1. The pump(s) shall be the product of a recognized manufacturer whose personnel have been regularly engaged in the design and manufacturing of such equipment. The manufacturer must be able to demonstrate experience with the design, fabrication, supply and successful operation of pumps of similar size and capacity. The manufacturer/supplier shall demonstrate upon the request of the engineer that:
 - a. They maintain a reasonable stock of spare parts for this equipment.
 - b. They employ sufficient qualified technical personnel to insure adequate servicing and operational

control advice covering hydraulic, mechanical, and electrical optimization of pump station procedures and practices.

P. Alternate Manufacturers:

1. The Drawings and Specifications use ITT Flygt as the "basis of design equipment". Additional acceptable pump manufacturers include Fairbanks Morse, ABS, or equal. This is not intended to restrict competition or rule out comparable competitive alternate pumps that may have certain superior or inferior features not affecting the basic operation of the equipment, but is for the purpose of establishing the desired standard of quality and features.
2. The Engineer will not provide new Drawings for construction showing alternate pumps. Manufacturers of alternate pumps shall provide revised Drawings to the Contractor. The revised Drawings will be amendments to the Construction Documents and will become part of the Contract Documents. Change Orders will not be issued to pay the cost of the changes necessary for use of an alternate pump. Contract time will not be increased for the use of an alternate pump.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Retain shipping flange protective covers and protective coatings during storage.
- B. Protect bearings and couplings against damage.
- C. Comply with pump manufacturer's rigging instructions for handling.

1.07 WARRANTIES AND BONDS

- A. Provide a warranty against defective or deficient materials and workmanship in accordance with the requirements of Division 01.
- B. The equipment manufacturer warranty shall be against defective or deficient equipment, workmanship and materials under normal use, operation and service. The warranty shall end five years from the date of Substantial Completion. The warranty shall be in printed form and apply to all similar units.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Supports and Thrust Blocks: All pipes connected to the pump station shall

be supported to prevent piping loads from being transmitted to the pumps. Pump station discharge force main piping shall be anchored with thrust blocks and supports where shown on the Contract Drawings.

- B. Pipe, Fittings, and Valves: All inside (pumping station and valve vault) piping shall be flanged ductile iron with threaded flanges in accordance with ANSI A21.15, latest revision, or seamless schedule 40 carbon steel with malleable iron fittings. All piping shall be rated for a minimum of 150 psi and shall have ring gaskets, 1/8 inch thick. Ductile iron pipe and fittings shall be in accordance with Division 15 Section "Ductile Iron Pipe and Fittings".
1. Swing Check valves shall be provided on the discharge line between the pumps and plug valves as shown on the Drawings.
 2. Swing Check valves shall be wafer type, bronze fitted, have external arms to facilitate draining/back flushing of lines, and shall be as supplied by the pump station manufacturer. The valve clapper shall swing completely clear of the waterway when the valve is open permitting a "full flow" thru the valve equal to nominal pipe diameter.
- C. Running Time Meters: A running time meter shall be supplied for each pump to show the number of hours of operation. The meter shall be enclosed in a dust and moisture-proof molded plastic case. The flush mounted dial shall register in hours and tenths of hours up to 99999.9 hours before repeating. The meter shall be suitable for operation on 120V AC supply.
- D. Gauges: Each sewage pump shall be equipped with 4-inch indicating gauges to be mounted in the inlet and discharge lines per the Construction Drawings. The gauges shall have graduated scale reading from 0 to 250 feet. The gauges shall be provided with cutoff cocks and brass pipe connections. Gauges shall have C510 Grade A phosphor bronze bourdon tubes with silver bronzed brass tipped, black and white luminated phenol dials, micrometer adjustment of pointers shall be liquid filled, and shall be diaphragm sealed. They shall be the first grade of the manufacturer, and shall be Ashcroft "Dura-Gauge Type 1379", or approved equal.

2.02 PUMP CRITERIA

- A. Provide complete pumping units designed to comply with the following pump criteria:
1. Duty Point: 1589 GPM @ 158.5' TDH (1 pump running)
2500 GPM @ 183' TDH (2 pumps running)
2987 gpm @ 200' tdh (3 pumps running)
 2. Maximum Pump Speed : 1780 RPM

3. Maximum Motor Horsepower: 105 HP
 4. Minimum Shut-off Head: 184 Feet
 5. NPSH Required at Duty Point: Max 21.1 Feet
 6. Minimum Pump Efficiency at Duty Point: 66.9 %
 7. Minimum Impeller Eye Diameter: 15 Inches
 8. Cooling Jacket: Yes
 9. Number of Pumps Required: 4
- B. Pumps shall be model NP 3301.185 HT, dry pit pumps as manufactured by ITT Flygt, or approved equal, modified as required to meet the specified requirements.
- C. Duty point shall fall within 70% to 120% of the pump Best Efficiency Point capacity.

2.03 SUBMERSIBLE WASTEWATER PUMPS, GENERAL

- A. Description: Factory-assembled and -tested, heavy-duty, centrifugal dry pit units, close-coupled (as applicable) with submersible electric motors, capable of pumping raw, unscreened sewage and wastewater, fully guaranteed for the application, and constructed for permanent installation.
- B. The entire pumping system, including the pump, motor and power cable, shall be approved for use in areas classified as hazardous locations in accordance with the NEC Class 1, Div. 1, Group C and D service as determined and approved by a U.S. nationally recognized testing laboratory (e.g. U.L., FM, CSA) at the time of the bidding of the project. As required by Factory Mutual (FM) the motor shall be capable of operating in pumped media up to 104 degrees Fahrenheit. Motor thermal switches shall monitor and protect the motor from excessive temperature.
- C. Pumps shall operate at specific speeds below the "Upper Limits of Specific Speeds" established by the Hydraulic Institute to minimize the potential for cavitation.
- D. Pumping system components shall not contain asbestos.

2.04 PUMPING SYSTEM DESIGN

- A. Submersible power cable shall be of adequate length to accommodate the pumping system installation as shown on the Drawings, sized according to NEC and ICEA standards, P-MSHA approved.

- B. Each pump shall be provided with adequate length of lifting chain or stainless steel cable. The capacity of the lifting system shall be a minimum of 50 percent greater than the combined weight of the pump and motor assembly.
- C. Power and pilot cable supports shall be provided and shall consist of a wire braid sleeve with attachment loops or tails to connect to the underside of the access frame.
- D. Manufacturer's Preparation for Shipping: Clean flanges and exposed machined metal surfaces and treat with anticorrosion compound after assembling and testing. Protect flanges, pipe openings, and nozzles with wooden flange covers or with screwed-in plugs.

2.05 PUMPING SYSTEM CONSTRUCTION

- A. Pumps:
 - 1. Major pump components, including pump casing, impeller, intermediate housing, and motor housing, shall be of gray cast iron, ASTM A-48, Class 30 or Class 35B, with smooth surfaces devoid of blow holes or other casting irregularities.
 - 2. All exposed nuts or bolts shall be ASTM A-276 Type 316 stainless steel.
 - 3. All metal surfaces coming into contact with the pumped media, other than stainless steel, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
 - 4. Sealing design shall incorporate metal-to-metal contact between machined surfaces. Pump/motor unit mating surfaces shall be machined and fitted with Nitrile or Viton rubber O-rings. Joint sealing will be the result of controlled compression of rubber O-rings in two planes and O-ring contact on four sides without the requirement of a specific bolt torque limit. Rectangular cross-sectioned rubber, paper or synthetic gaskets that require specific torque limits to achieve compression shall not be considered adequate or equivalent to specified requirements. Secondary sealing compounds, elliptical O-rings, grease or other devices are unacceptable.
- B. Cooling System:
 - 1. Each pump/motor unit shall be provided with an integral, self-supplying cooling system (closed loop glycol or equivalent). No pump fluid or external water source shall be used to cool the motors.

2. The motor cooling jacket shall encircle the stator housing and shall be made of cast iron, ASTM A-48, Class 35B.
3. The cooling jacket shall provide heat dissipation for the motor regardless of whether the motor unit is submerged in the pumped media or surrounded by air.
4. Impeller back vanes shall provide the necessary circulation of the cooling liquid through the cooling system. Two cooling liquid supply pipes, one discharging low and one discharging high within the jacket, shall supply the cooling liquid to the jacket. An air evacuation tube shall be provided to facilitate air removal from within the jacket. Any piping internal to the cooling system shall be shielded from the cooling media flow allowing for unobstructed circular flow within the jacket about the stator housing. Two cooling liquid return ports shall be provided. The internals to the cooling system shall be non-clogging by virtue of their dimensions. Drilled and threaded provisions for external cooling and seal flushing or air relief are to be provided. The cooling jacket shall be equipped with two flanged, gasketed and bolted inspection ports of not less than four inches in diameter located 180 degrees apart. The cooling system shall provide for continuous submerged or completely non-submerged pump operation in liquid or in air having a temperature of up to 40 degrees Celsius (104 degrees Fahrenheit), in accordance with NEMA standards. Restrictions limiting the ambient or liquid temperatures to less than 40 degrees Celsius are unacceptable.

C. Cable and Cable Entry Seal:

1. The power cable shall be suitable for submersible pump and motor applications and sized according to NEC and ICEA standards.
2. The power cable provided shall be of sufficient length to extend from the pumping unit to the terminal junction box without being spliced and shall include enough slack to allow it to be routed and secured out of the way of any equipment in the dry well. It shall be the Contractor's responsibility to ensure that the cable provided by the system supplier is of adequate length to comply with the specified requirements.
3. The outer jacket of the power cable shall be oil resistant chloroprene rubber.
4. The cable seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by Type 316 stainless steel washers, all having a close tolerance fit against the cable outside diameter and the cable entry inside diameter. The grommets shall be compressed by the cable entry unit, thus

providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems are unacceptable.

D. Motor:

1. The motor shall be suitable for 460-volt, 60 Hertz, 3-phase electric power. Motor horsepower shall be as specified in this Section.
2. The pump motor shall a NEMA B (3 phase) design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180 degrees Celsius (356 degrees Fahrenheit). The stator insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95 percent. The motor shall be inverter duty rated. Inverter duty rated motors shall be in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is unacceptable. The use of bolts, pins or other fastening devices requiring penetration of the stator housing is unacceptable. The motor shall be specifically designed for submersible pump usage and designed for continuous duty pumping media of up to 40 degrees Celsius (104 degrees Fahrenheit) with an 80 degrees Celsius temperature rise and capable of at least 15 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches shall be embedded in the stator end coils to monitor the temperature of each phase winding. The thermal switches shall be used in conjunction and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber shall be sealed off from the stator housing and shall contain a terminal board for connection of power and pilot sensor cables using threaded compression type terminals. The use of wire nuts or crimp-type connectors is unacceptable. The same manufacturer shall produce the motor and the pump.
3. The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10 percent. A performance chart shall be provided in the submittal showing curves for torque, current, power factor, input/output kW, efficiency, and data on starting and no-load characteristics.
4. The motor and cable shall be capable of continuous submergence

underwater without loss of watertight integrity to a depth of 65 feet.

5. The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shutoff through run-out.

E. Pilot Cable:

1. The pilot cable shall be designed specifically for use with submersible pumps and shall be type SUBCAB (Submersible Cable). The cable shall be shielded, multi-conductor type with a chloroprene outer jacket and the tinned copper conductors insulated with ethylene-propylene rubber. The conductors shall be arranged in twisted pairs. The cable shall be rated for 600 volts and 90 degrees Celsius (194 degrees Fahrenheit) with a 40 degrees Celsius (104 degrees Fahrenheit) ambient temperature and shall be approved by Factory Mutual (FM). The cable length shall be adequate to reach the junction box without the need for splices.

F. Bearings:

1. The pump shaft shall rotate on at least 2 grease-lubricated bearings. The upper bearing, provided for radial forces, shall be a single roller bearing. The lower bearing shall consist of at least one roller bearing for radial forces and one or two angular contact ball bearings for axial thrust.
2. The minimum L10 bearing life shall be 100,000 hours at any point along the usable portion of the pump curve at maximum product speed.

G. Mechanical Seal:

1. Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The lower seal shall be independent of the impeller hub. The seals shall operate in a lubricant reservoir that hydro-dynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide seal ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide seal ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment and shall be capable of operating in either clockwise or counter clockwise direction of rotation without damage or loss of seal.

2. Should both seals fail and allow fluid to enter the stator housing, a port shall be provided to direct that fluid immediately to the stator float switch to shut down the pump and activate an alarm. In the event of fluid intrusion, fluid shall not come into contact with the lower bearings.
 3. The following seal types are not considered acceptable equivalents or alternates to the dual independent seal specified: (a) shaft seals without positively driven rotating members, and (b) conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces. Systems requiring a pressure differential to offset pressure and to affect sealing shall not be used.
 4. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate continuously while non-submerged without damage while pumping under load.
 5. Seal lubricant shall be FDA approved and non-toxic.
- H. Pump Shaft:
1. Pump and motor shaft shall be a solid, continuous shaft. The pump shaft shall be an extension of the motor shaft. Couplings shall not be acceptable. The pump shaft shall be of stainless steel and shall be completely isolated from the pumped liquid.
- I. Impeller
1. Impellers shall be of gray cast iron, Class 35B, dynamically balanced, multiple vaned, double shrouded non-clogging design having long through lets without acute turns. The impellers shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in wastewater. Impellers shall be keyed to the shaft, retained with an expansion ring and shall be capable of passing a minimum four inch diameter solid. All impellers shall be coated with an acrylic dispersion zinc phosphate primer.
- J. Wear Rings:
1. A wear ring system shall be incorporated into the pump design to provide efficient sealing between the volute and suction inlet of the impeller. Each pump shall be equipped with a Nitrile rubber coated steel or brass ring insert that is drive fitted to the volute inlet.

2. This pump shall also have a stainless steel impeller wear ring heatshrink fitted onto the suction inlet of the impeller.
- K. Volute:
1. Pump volutes shall be single-piece gray cast iron, ASTM Class 30 or Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as shown on the Plans.
- L. Protection:
1. All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. Should high temperature occur, the thermal switches shall open, stop the motor and activate an alarm.
 2. A lower bearing temperature sensor shall be provided. The sensor shall directly contact the outer race of the thrust bearing providing for accurate temperature monitoring.
 3. A leakage sensor shall be provided to detect water in the stator chamber. The Float Leakage Sensor (FLS), a small float switch, shall be used to detect the presence of water in the stator chamber. When activated, the FLS will stop the motor and activate an alarm. Use of voltage sensitive solid state sensors shall not be allowed.
 4. The thermal switches, FLS and the lower bearing temperature monitor shall be connected to a CAS (Control and Status) monitoring unit. The CAS design shall be such to allow it to be mounted in the control panel.
- M. Spare Parts: Provide the following spare parts for each pump unit:
1. One (1) O-ring kit.
 2. One (1) Upper Mechanical Seal.
 3. One (1) Lower Mechanical Seal.
 4. One (1) Upper Bearing.
 5. Two (2) Lower Bearings.
 6. One (1) Volute Wear Ring.
 7. One (1) Impeller Wear Ring.
- N. Painting: The pump shall be painted after assembly and testing, with a water reducible air dry enamel. The paint shall be applied in one coat

covering all exterior surfaces. The pump shall be air dried after testing and before painting.

2.06 ACCESSORIES

- A. Chain Holder: Chain holder shall be Type 316 stainless steel and of the size recommended by the pumping system manufacturer.
- B. Anchor Bolts:
 - 1. Anchor bolts shall be Type 316 stainless steel. Pump manufacturer shall provide the size and layout dimensions for all anchor bolts for railings, pump supports, pumps, and accessories.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine pumping system installation areas, equipment foundations, and conditions with Installer present to verify compliance with requirements for installation and other conditions affecting installation and performance of pumping systems before beginning pump installation.
- B. Examine rough-in for piping systems to verify actual locations of piping connections prior to installation.

3.02 INSTALLATION

- A. Install pumping systems and accessories in accordance with manufacturer's written installation and alignment instructions and shop drawings.
- B. Support piping such that pumps do not support weight of piping.

3.03 CONNECTIONS

- A. Install pressure gages on the inlet and discharge pipe of each pump.
- B. Install electrical connections for power, controls, and instrumentation devices. Electrical power components, wiring, and connections are specified in Division 16 Sections. Control and instrumentation devices are specified elsewhere in this Section.
- C. Ground Equipment:
 - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.04 ADJUSTING

- A. Pump Controls: Set pump controls for automatic start, stop, and alarm operation as required for system application.

3.05 COMMISSIONING

- A. Final Checks before Starting: Perform all preventive maintenance operations and checks before start-up in strict conformance with manufacturer's written instructions.
- B. Starting Procedure: Perform start-up for each pumping unit in strict conformance with the manufacturer's written instructions and in the presence of the Owner and Engineer. Provide manufacturer's certification of installation and operation as specified.
- C. Factory Service
 - 1. The equipment manufacturer shall provide factory service for installation inspection, equipment start-up, and operator training. Length of service shall be as required to fully train the Owner's personnel in the operation and maintenance of the equipment.
 - 2. At any time within six months of the date of start-up, provide, at Owner's request and at no additional cost, the services of equipment manufacturer's representative(s) on the site for a period not to exceed two days.

3.06 OPERATION AND MAINTENANCE MANUALS

- A. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing initial testing. Engineer will comment on whether general scope and content of manual are acceptable.
- B. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing initial testing. Engineer will return copy with comments.
- C. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineers comments and prior to commencing initial testing.
- D. Furnish, prior to substantial completion, eight copies of final maintenance manuals. All corrections shall have been made necessary to comply with Engineer's comments in the final manuals. Final manuals shall be indexed and composed of suppliers' maintenance manuals on all equipment and suppliers' brochures on all specialty equipment, including performance curves with size, model, figure number, etc., indicated to identify unit furnished.

- E. Maintenance manuals are to be of a hardback, loose-leaf type and of a durable quality. In addition, a complete electronic copy shall be provided in MS-Word or searchable Adobe PDF format.
- F. Manuals are to be for the specific equipment provided. Manuals describing general equipment lines will not be accepted. Where non-relevant information is present in the manual, it shall be neatly marked out with a single "X" through non-relevant portions.
- G. Include in each set of manuals the following:
 - 1. Manufacturer's parts list identified with the make, model and serial number of the equipment furnished.
 - 2. Control and wiring diagrams.
 - 3. Installation, operation (including start up and shut down procedures), lubrication and maintenance instructions.
 - 4. Manufacturers recommended spare parts list.
- H. If an Owner's representative is assigned to the project either through the Owner or the Engineer, the Contractor shall make a copy of all instruction manuals available to the Representative. Manuals on specific items shall be available prior to installation of the item. This requirement in no way relieves the Contractor of his other responsibilities.

END OF SECTION

ATTACHMENT 3

Revised

**Section 9, Scope of Work and Technical Specifications
13500-1, Odor Control System**

**Section 9, Scope of Work and Technical Specifications
13500-1, Odor Control System**

The following revisions have been made in this section:

Section 13500 – ODOR CONTROL SYSTEM: Item 2.03B shall be changed to “The reactor vessel shall be capable of processing odorous air at such a velocity that the empty bed contact time (EBCT) across the activated carbon bed shall not exceed 3 seconds.”

Section 13500 – ODOR CONTROL SYSTEM : Add the following Item 2.19- “The contractor may provide a CFD analysis if desired.”

Section 13500 – ODOR CONTROL SYSTEM: Add the following to the end of Item 1.04B- “The odor control design system shall include design calculations signed and sealed by a registered professional engineer.”

Section 13500 – ODOR CONTROL SYSTEM: Add to Item 2.16D- “stainless steel quick access clamps shall be provided.”

Section 13500 – ODOR CONTROL SYSTEM: Add the following Item 2.16I- “Prefilter housing shall provide integral legs for support unit.”

Section 13500 – ODOR CONTROL SYSTEM: Add the following Item 2.12.B.3- “A spare set of prefilter pads shall be provided.”

Section 13500 – ODOR CONTROL SYSTEM: Add the following Item 2.01.B8- “A class 1 flame retardant vinyl ester system shall be provided on all exposed systems.”

Section 13500 – ODOR CONTROL SYSTEM: Item 2.04B- Shall change “flat bottom” to “flat bottom with internal slope of 1/8” per foot to allow condensate draining.”

ATTACHMENT 4

Section 4, Scope of Work and Technical Specifications Table of Contents

<u>TITLE</u>	<u>SECTION</u>
DIVISION 1 – GENERAL REQUIREMENTS	
Summary of Work	01010
Control of Work	01015
Control of Materials	01016
Project Coordination	01041
Cutting and Patching	01045
Measurement and Payment	01150
Application for Payment	01152
Schedules, Reports and Payments	01155
Construction Progress Documentation	01156
Project Meetings	01200
Alternates	01230
Submittals	01300
Progress Reports and Photographs	01320
Progress Tracking Document Control	01355
Schedule of Values	01370
Testing Laboratory Services	01410
Inspection of Work	01420
Temporary Facilities	01500
Dust Control	01562
Material and Equipment	01600
Contract Closeout	01700
Clean-up	01710
Record Documents	01720

<u>TITLE</u>	<u>SECTION</u>
Operation and Maintenance Data	01730
Warranties and Bonds	01740
Spare Parts and Special Tools	01760
DIVISION 2 – SITE WORK	
Demolition	02060
Removal of Existing Equipment	02062
Packaging and Storage of Existing Equipment	02063
Modifications to Existing Structures Piping, and Equipment	02064
Site Preparation	02100
Dewatering	02140
Earthwork	02200
Excavation, Backfill, Fill and Grading for Structures	02220
Excavation, Backfill, Fill and Grading for Pipe	02221
Rip Rap	02271
Temporary Erosion and Sediment Control	02276
Seeding	02486
Silt Fence	02542
Pavement Repair and Restoration	02575
Exterior Ductile Iron Pipes and Fittings	02615
Temporary By-Pass Pumping Systems	02960
Miscellaneous Work and Clean-up	02999
DIVISION 3 – CONCRETE	
Formwork	03100

<u>TITLE</u>	<u>SECTION</u>
Concrete Reinforcement and Doweling	03200
Concrete Joints	03250
Cast-in-Place Concrete	03300
Precast Concrete Manholes	03455
Drainage Structures	03456
Pre-Cast Structures	03460
Grout	03600
 DIVISION 5 – METALS	
Structural Steel	05120
Stairs and Platforms	05300
Miscellaneous Metals	05500
Manhole Frames and Covers	05510
Aluminum Handrails	05520
Aluminum Gratings and Checkered Plate	05530
 DIVISION 8 – DOORS AND WINDOWS	
Floor Access Doors	08310
 DIVISION 9 - FINISHES	
Painting	09900
 DIVISION 10 - SPECIALTIES	
Fire Extinguishers	10522
 DIVISION 11 - EQUIPMENT	

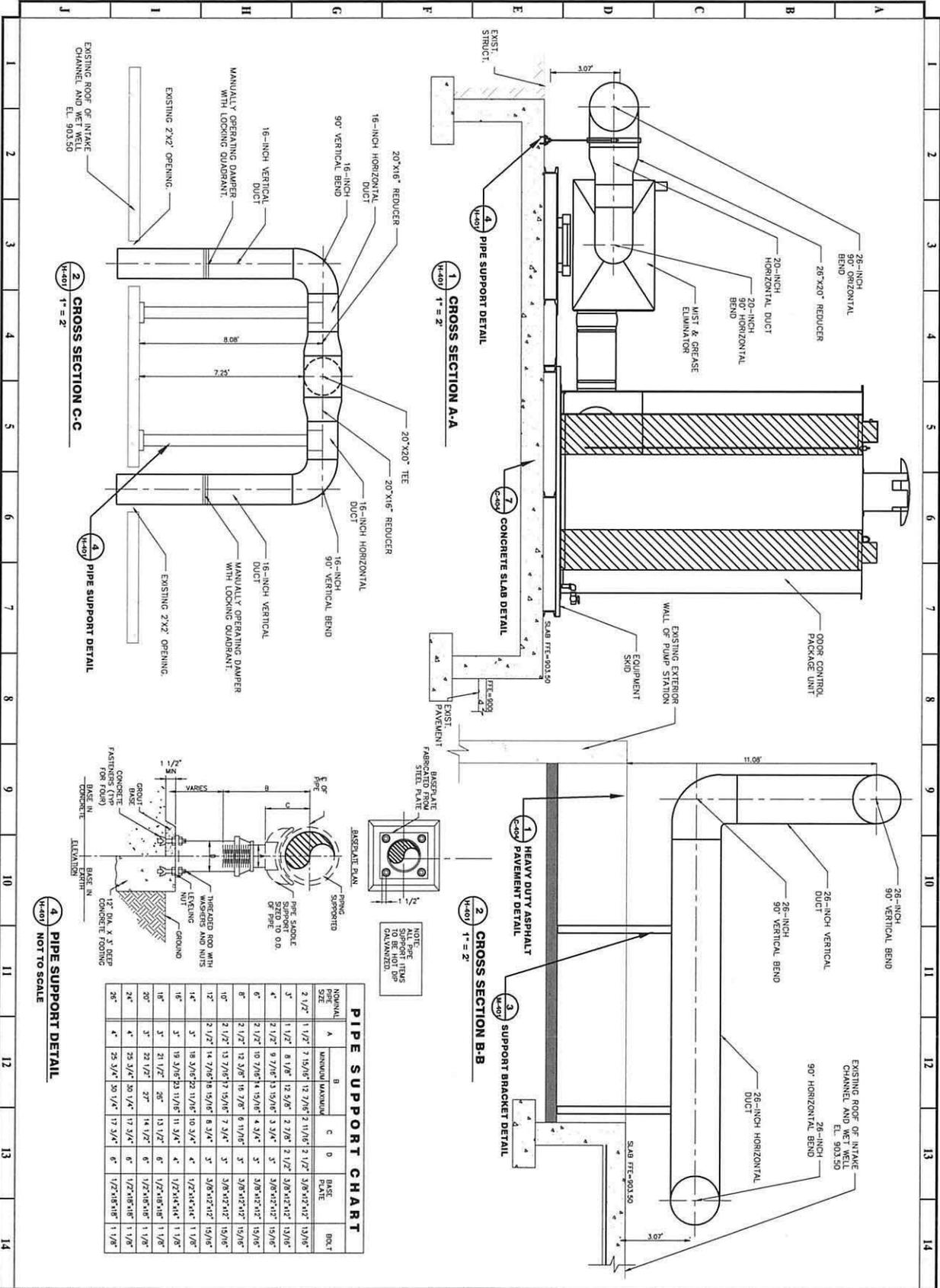
<u>TITLE</u>	<u>SECTION</u>
Cast Iron Sluice Gates	11100
Electromagnetic Flowmeters	11420
Dry Pit Submersible Wastewater Pumps	11500
Aluminum Slide Gates	11800
 DIVISION 13 – SPECIAL CONSTRUCTION	
Surge Protection	13105
Prefabricated Metal Buildings and Shelters	13129
Instrumentation and Controls	13400
Instrumentation Devices	13420
Cabinets and Enclosures	13430
PLC	13450
Application Engineering Services	13460
Odor Control Equipment	13500
 DIVISION 15 - MECHANICAL	
Pressure Testing	15016
Pipe and Pipe Fittings	15060
Ductile Iron Pipe and Fittings	15062
Polyvinyl Chloride Pipe and Fittings	15064
Pipe Hangers and Supports	15094
Valves and Appurtenances	15101
Steel Pipe	15115
Pipe Couplings and Expansion Joints	15162
Plumbing and Miscellaneous Piping Systems	15450

<u>TITLE</u>	<u>SECTION</u>
Nonmetal Ducts	15810
Louvres	15879
DIVISION 16 – ELECTRICAL	
Electrical General	16010
Raceway Systems	16110
Wires and Cables 600V	16120
Boxes and Fittings	16130
Wiring Devices	16140
Motor Feed Disconnect Switches	16170
Variable Frequency Drives	16171
Identification	16191
Interior Lighting	16511
Exterior Lighting	16520
Surge Protection	16620

ATTACHMENT 5

Revised Drawings

**Civil Details, HVAC Details, Entrance Floor - Piping Plan,
Entrance Floor – Piping Demolition, Pump Station Bottom Plan-
HVAC and HVAC Details**



DRAWING DATE: 06/28/2013
 DRAWING SCALE: AS SHOWN
 PROJECT NUMBER: 2015-0028
 DRAWING NUMBER: **H-401**

DRAWN BY: AMH
 DESIGNED BY: KLL
 CHECKED BY: RRM

ISSUED FOR CONSTRUCTION

DRAWING TITLE
HVAC DETAILS

© 2013 PRIME ENGINEERING, INC.
 Scale, as stated herein, are valid on the original drawing; the dimensions of which are 22 by 34 inches. These scales, unless herein, are hereby changed by the ratio of the overall sheet dimensions of the print to corresponding dimensions of the original drawing. This drawing is the property of PRIME ENGINEERING, INCORPORATED and is not to be reproduced or copied in whole or in part. It is only to be used for the project and site specifically identified herein and is not to be used on any other project. It is to be returned upon request.

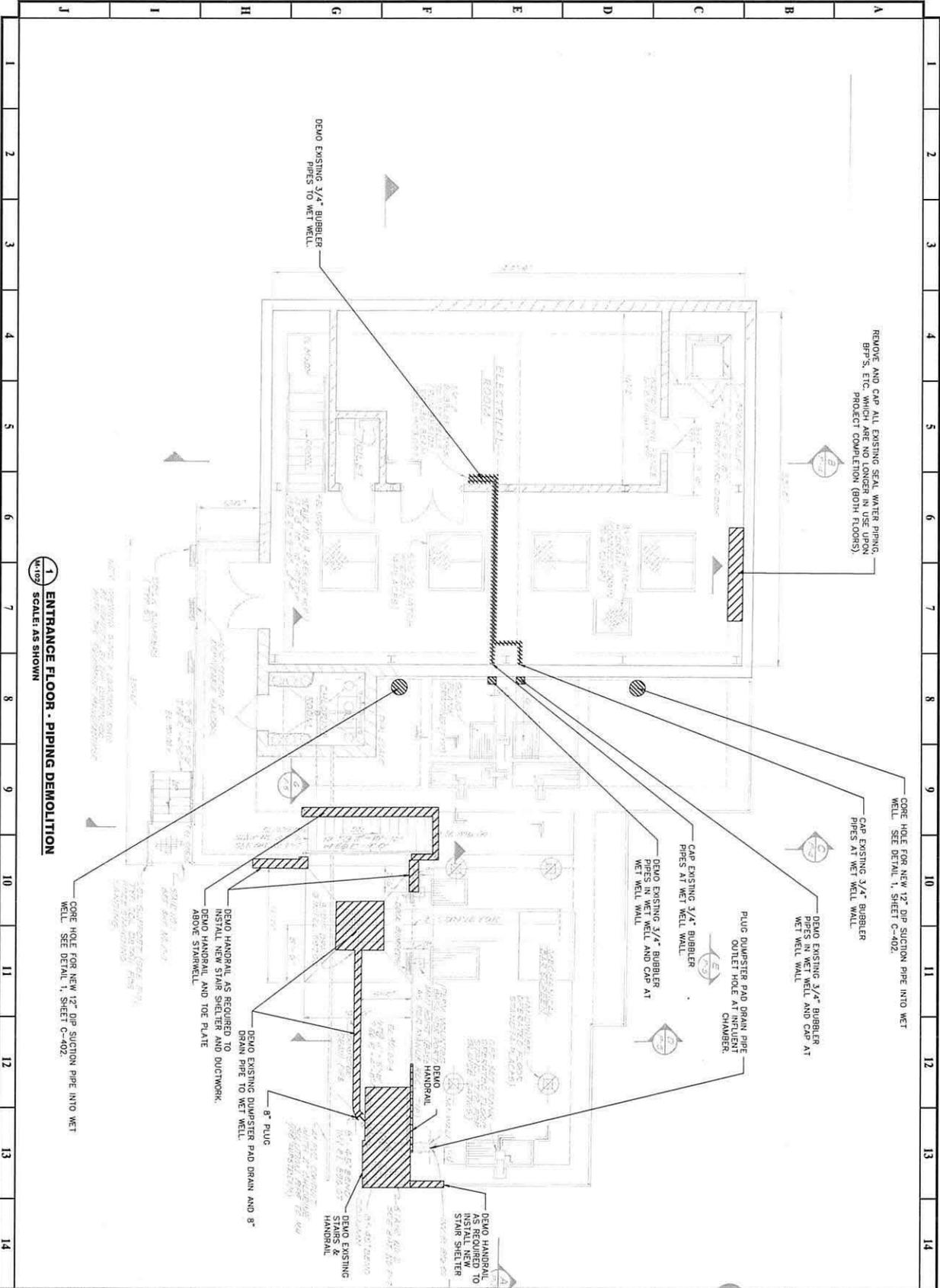
SEAL
 G E O R G I A
 REGISTERED PROFESSIONAL ENGINEER
 NO. 9112
 DATE: 06-10-2016

REVISIONS

NO.	DATE	DESCRIPTION
01	03/18/15	CONSTRUCTION DOCUMENTS

PROJECT:
CHATTAHOOCHEE III PUMP STATION
 6000 STATE BRIDGE ROAD
 JOHNS CREEK, GEORGIA 30097
 LAND LOT F34, DIST. 1, SECT. 1
 PREPARED FOR:
 FULTON COUNTY
 DEPARTMENT OF
 PUBLIC WORKS

PRIME ENGINEERING
 INCORPORATED
 1715 NORTHSIDE PARKWAY NW
 SUITE 200
 ATLANTA, GEORGIA 30327
 404.423.7100



1 ENTRANCE FLOOR - PIPING DEMOLITION
SCALE: AS SHOWN

DRAWING DATE 06/28/2013	DRAWN BY AMH
DRAWING SCALE AS SHOWN	DESIGNED BY KLL
PROJECT NUMBER 2015-0028	CHECKED BY RRM
DRAWING NUMBER M-102	
ISSUED FOR CONSTRUCTION	

DRAWING TITLE
**ENTRANCE FLOOR
- PIPING
DEMOLITION**

© 2013 PRIME ENGINEERING, INC.
Scales, as stated herein, are valid on the original drawing; the dimensions of which are 22 by 34 inches. These scales, noted herein, are hereby changed by the ratio of the overall sheet dimensions of the print to corresponding dimensions of the original drawing. This drawing is the property of PRIME ENGINEERING, INCORPORATED and is not to be reproduced or copied in whole or in part. It is only to be used for the project and site specifically identified herein and is not to be used on any other project. It is to be returned upon request.

SEAL

DATE: 06-10-2016

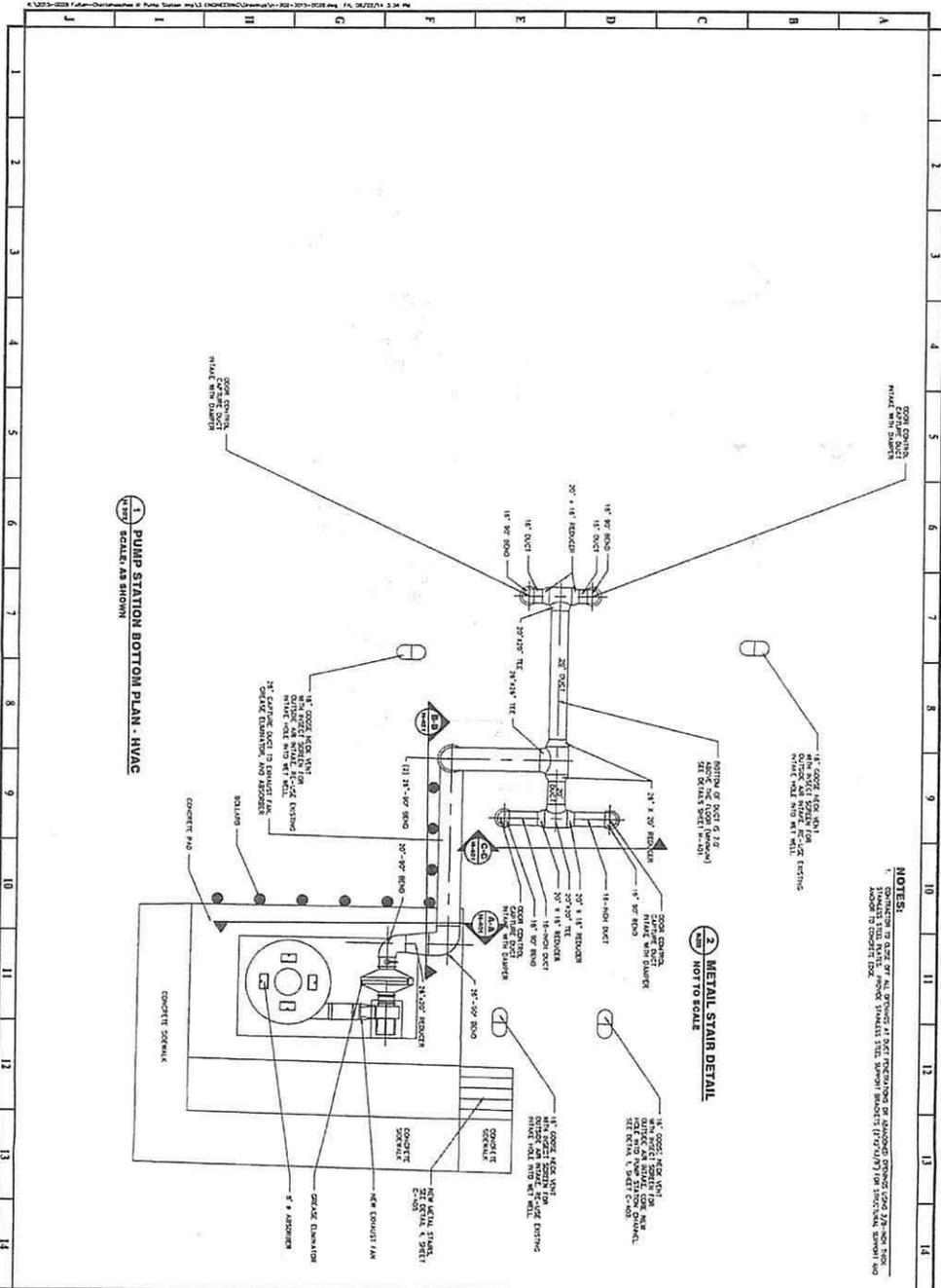
REVISIONS

NO.	DATE	DESCRIPTION
0	03/19/15	CONSTRUCTION DOCUMENTS

PROJECT:
**CHATTAHOOCHEE III
PUMP STATION**
6000 STATE BRIDGE ROAD
JOHNS CREEK, GEORGIA 30097
LAND LOT E34, DIST. 1, SECT. I
PREPARED FOR:
**FULTON COUNTY
DEPARTMENT OF
PUBLIC WORKS**

**PRIME
ENGINEERING**
INCORPORATED

3715 NORTHSIDE PARKWAY NW
SUITE 200
ATLANTA, GEORGIA 30327
404.425.7100

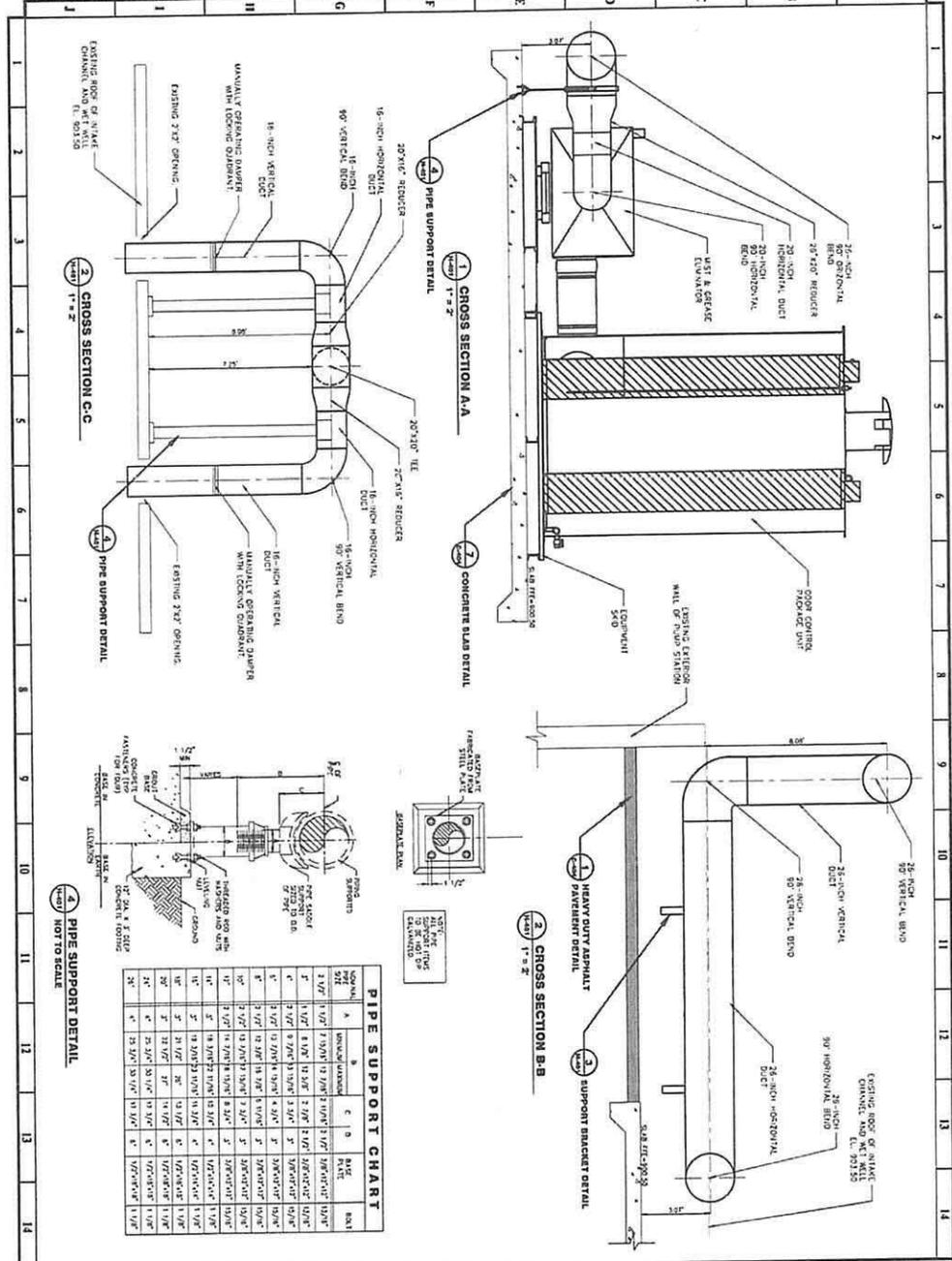


NOTES:
 1. CONCRETE TO BE 4000 PSI STRENGTH AT 28 DAYS CURED. ALL REINFORCING TO BE #4 BARS. ALL REINFORCING TO BE #4 BARS. ALL REINFORCING TO BE #4 BARS.
 2. METAL STAIRS TO BE 304 STAINLESS STEEL. SEE SHEET 10-101 FOR STRUCTURAL DETAILS.

1. PUMP STATION BOTTOM PLAN - HVAC
 SCALE: AS SHOWN

2. METAL STAIR DETAIL
 NOT TO SCALE

DRAWING TITLE PUMP STATION BOTTOM PLAN - HVAC		SEAL DATE:	REVISIONS <table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	DATE	DESCRIPTION										PROJECT: CHATAHOOCHEE III PUMP STATION 6000 STATE BRIDGE ROAD JOHNS CREEK, GEORGIA 30097 PREPARED FOR: FULTON COUNTY DEPARTMENT OF PUBLIC WORKS	PRIME ENGINEERING 1000 W. BROADWAY ATLANTA, GA 30308 (404) 525-1111 WWW.PRIMEENGINEERING.COM
NO.	DATE			DESCRIPTION													
DRAWING NO.: H-202 DRAWN BY: AMH CHECKED BY: RAN DATE: 06/24/13	PROJECT NO.: 2013-0021 DRAWING NUMBER: H-202																



DRAWING DATE: 06/27/24 DRAWING SCALE: AS SHOWN PROJECT NUMBER: 2015-0010 DRAWING NUMBER: H-401	DESIGNED BY: AS SHOWN CHECKED BY: AS SHOWN	DRAWING TITLE: HVAC DETAILS	I, JILL PRYDE, ENGINEER, INC. hereby certifies that the drawings on which this contract is based were prepared by the duly licensed and qualified professional engineer or architect under my direct supervision and that I am a duly licensed and qualified professional engineer or architect in the State of Georgia. This drawing is the property of PRIME ENGINEERING, INC. and shall not be used for any other project without the written consent of PRIME ENGINEERING, INC.	SEAL: JILL PRYDE, ENGINEER, INC. No. 10110	REVISIONS: 1. DATE: 06/27/24 2. DESCRIPTION:	PROJECT: CHATTAHOOCHEE III PUMP STATION 6000 STATE BRIDGE ROAD JOENS CREEK, GEORGIA 31097 LAND LOT 134, DIST. 1, SECT. 1 PREPARED FOR: FULTON COUNTY DEPARTMENT OF PUBLIC WORKS	PRIME ENGINEERING 1000 NORTH FULTON AVENUE FULTON COUNTY, GEORGIA 31707 (706) 686-1111 www.prime-engineering.com
					DATE:	DRAWING NUMBER: H-401	